CEMLA – FIGI - WorldBank
Financial Sector Cyber Resilience Workshop
Session VII - Enhancing financial sector resilience—exercising, mapping and collaboration

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bank-banque-canada.ca
**Exercise Experience**

- Participated or lead countless continuity exercises for various systems / processes such as CLS, LVPS, Continuity of Operations, Telecom failures, etc.

- Designed and lead texts of manual contingency capability assessments

- Played an integral role in the design and execution of Canada’s largest critical-finance sector systemic-level operational resilience exercise which focused on escalation, coordination, and communication within the financial sector.

- Design-team member on the G7 Cyber Expert Group – Cross Boarder Contingency Exercise

- Adviser on the Bank of Canada’s “Resiliency in the Wholesale Payments System” Project
Personal Learnings from Designing Exercises
Defining the Objective

- Scenario
- Stakeholder Scan
- System Scan
- Processes Scan
- Threat Scan
- Environment Scan
- Objectives
Environment Scan: Canadian Wholesale Payment Context
Environment Scan: Canadian Wholesale Payment Context
Environment System Scan: Canadian Wholesale Payment Context

Send: Payment Instructions

Collateral Pledging

Collateral Allocation

Collateral Management / Bilateral agreements

Collateral Valuation

Payment Risk Controls

Receive: Payment Instructions

SWIFT Gateway

Payment Engine

AML

Other AML Systems

Deposit System

Other Depository Systems

Payor

Payee
### Environment Stakeholder Scan: Canadian Context – Federal Level

<table>
<thead>
<tr>
<th>Investors</th>
<th>Boards</th>
<th>Committees</th>
<th>Associations</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMI</td>
<td>FI</td>
<td>Clients / Consumers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **FMI**: Financial Institutions
- **FI**: Financial Institutions
- **Clients / Consumers**
- **Associations**

- **BANK OF CANADA**
- **OSFI**
- **CDIC**
- **Office of the Privacy Commissioner of Canada**
- **Department of Finance Canada**
- **Ministère des Finances Canada**
## Environment Process Scan:

### Processes with the system

<table>
<thead>
<tr>
<th>Technical</th>
<th>Operations</th>
<th>Crisis Coordination</th>
<th>Communications</th>
<th>Tail-end</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and recovery of computer systems</td>
<td>Continuity and manual processing</td>
<td>Information exchange, resource deployment</td>
<td>Call trees, Coordinated Public Messaging</td>
<td>Post mortem, regulatory changes, legal actions</td>
</tr>
</tbody>
</table>
Environment Threat Scan:

<table>
<thead>
<tr>
<th>Threat Vectors</th>
<th>Capabilities</th>
<th>Threat Actors</th>
<th>Targets</th>
</tr>
</thead>
</table>
Conducting Exercises: Design
Objectives not Scenario

Environment scan shows:
Manual contingency capacities are inconsistent among participants.
Uncertain long term viability of manual operations.

**Objective:**
Test RTGS participants' ability to send/receive 100% of payment volumes after a SIB has been disabled by a destructive cyber attack and has implemented manual contingency. Recovery times anticipated to be 48 hours.

**NOT THIS**

**Objective:**
Test the wholesale payments environment to a destructive cyber attack.
Audience / Participants / Design Team

**Audience**
Receives the exercise after action reports

**Participants**
Receives engage with the exercise, respond to injects

**Design Team**
Design the exercise with objectives, audience, and participants in mind
Type of Exercise

- Seminar
- Functional
- Survey
- Table Top
- Live
Size and Scope Changes

Don’t
Success

Move away from Pass / Fail

Focus on Areas for Improvement
Risk Factors

- Human nature
- Resource constraints
- Objectives are too ambiguous
- Have not dealt with the previous exercise lessons learned
- Suspension of disbelief
- Halo effect from past success / performance
- Failing to get stakeholder buy-in
- Budget constraints
- External coordination
Thank you